Electromagnetism Assessment Handout

Student Name: _____	**Class:** _____
Student ID: _____	**Date:** _____

Assessment Details

Duration: 45 minutes	**Total Marks:** 100
Topics Covered:	• Magnetic Fields • Electric Currents • Electromagnetic Induction • Applications of Electromagnetism

Instructions to Students:

1. Read all questions carefully before attempting.
2. Show all working out - marks are awarded for method.
3. Calculator use is permitted except where stated otherwise.
4. Write your answers in the spaces provided.
5. If you need more space, use the additional pages at the end.
6. Time management is crucial - allocate approximately 1 minute per mark.

Section A: Multiple Choice [20 marks]

Question 1 **[2 marks]**

What is the direction of the magnetic field around a current-carrying wire?

A) Clockwise

B) Counterclockwise

C) Upward

D) Downward

Question 2 **[2 marks]**

What is the difference between a static electric charge and a current?

A) A static electric charge is a type of current

B) A current is a type of static electric charge

C) A static electric charge is a buildup of electrons, while a current is the flow of electrons

D) A current is a buildup of electrons, while a static electric charge is the flow of electrons

Question 3 **[2 marks]**

What is the principle of electromagnetic induction?

A) The production of a magnetic field around a current-carrying wire

B) The production of an electric current through a changing magnetic field

C) The production of a static electric charge through a magnetic field

D) The production of a magnetic field through a static electric charge

Question 4 **[2 marks]**

What is an example of a real-world application of electromagnetism?

A) A battery

B) A generator

C) A motor

D) All of the above

Question 5 **[2 marks]**

What is the relationship between electricity and magnetism?

A) Electricity and magnetism are two separate phenomena

B) Electricity and magnetism are related, but distinct

C) Electricity and magnetism are two sides of the same phenomenon

D) Electricity and magnetism are opposite phenomena

Section B: Short Answer Questions [40 marks]

Question 6 **[8 marks]**

Describe the magnetic field around a coil of wire carrying a current. How does the field change if the current is increased or decreased?

Question 7 **[8 marks]**

Explain the difference between a static electric charge and a current in the context of a lightning storm.

Question 8 **[8 marks]**

A generator uses electromagnetic induction to produce electricity. Describe the process of electromagnetic induction and how it is used in a generator.

Question 9 **[8 marks]**

What is the relationship between electricity and magnetism? Provide an example to support your answer.

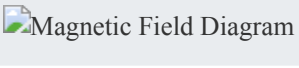
Question 10 **[8 marks]**

Describe the behavior of electric and magnetic fields in a given scenario. How do the fields interact with each other?

Section C: Diagram Labeling [40 marks]

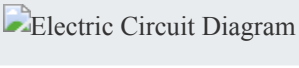
Question 11 **[10 marks]**

Label the diagram of a magnetic field around a current-carrying wire.



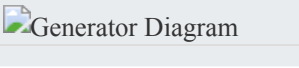
Question 12 **[10 marks]**

Label the diagram of an electric circuit.



Question 13 **[10 marks]**

Label the diagram of a generator.



Question 14 **[10 marks]**

Label the diagram of a motor.


Motor Diagram

Conclusion

This assessment is designed to evaluate your understanding of the fundamental principles of electromagnetism. Remember to read each question carefully and answer to the best of your ability. Good luck!

Note to Teacher

Please ensure that students have access to a calculator and a pencil or pen. Provide clear instructions and examples for each section of the assessment. Allow students to ask questions and seek clarification if needed. Encourage students to use diagrams and illustrations to support their answers.

Differentiation Options

For students with visual impairments, provide large print or braille versions of the assessment. For students with learning disabilities, provide extra time or a reader/scribe to assist with the assessment. For English language learners, provide a bilingual dictionary or a translator to assist with the assessment. For gifted students, provide additional challenging questions or a more complex scenario to apply the principles of electromagnetism.

Bloom's Taxonomy Alignment

Knowledge: recalling the fundamental principles of electromagnetism
Comprehension: understanding the behavior of electric and magnetic fields
Application: applying the principles of electromagnetism to simple real-world scenarios
Analysis: identifying and explaining the differences between static and current electricity
Synthesis: recognizing the relationship between electricity and magnetism

Multiple Intelligence Approaches

Visual-spatial intelligence: diagram labeling and visualizing electric and magnetic fields
Logical-mathematical intelligence: applying mathematical concepts to electromagnetic phenomena
Linguistic intelligence: reading and writing about electromagnetic concepts
Interpersonal intelligence: discussing and explaining electromagnetic concepts to peers

Clear Success Criteria

Demonstrating an understanding of the fundamental principles of electromagnetism
Applying the principles of electromagnetism to simple real-world scenarios
Identifying and explaining the differences between static and current electricity
Recognizing the relationship between electricity and magnetism

Evidence Collection Methods

Multiple choice questions
Short answer questions
Diagram labeling
Student self-assessment and reflection

Feedback Opportunities

Immediate feedback on multiple choice questions
Feedback on short answer questions and diagram labeling
Student self-assessment and reflection
Teacher feedback and discussion with students